Research of domanic source rock by pyrolytic gas chromatography-mass spectrometry method

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Abstract:

We applied new novel approach based on pyrolytic gas chromatography-mass spectrometry technology (Py-GCMS) developed by Frontier Lab company (Japan) in order to get the same data as it can be acquired by using conventional core analyzer. Experimental part describes the detailed measurement procedure, temperature program and outcomes acquired by using IFP 160000 as a standard sample. We have managed to demonstrate accuracy and reproducibility of tests for the domanic source rock samples and its kerogen extracted respectively. In results of this analytical challenge we were able to get pyrograms providing the S_1 (free hydrocarbons), S_2 (potential hydrocarbons), T_{max} (temperature at which the maximum rate of hydrocarbon generation is reached) information with level of confidence we usually could see doing conventional core analyzer tests. Some important conclusions regarding petroleum generation and thermal maturity have been made. S_1 and S_2 significantly decrease for kerogen samples with T_{max} growth at the same time. Moreover mass spectra data of core samples pyrolizates can be collected easily to detect certain groups of compounds. Sulfur-containing compounds temperature extracted by Py-GCMS can be measured for example. Py-GCMS technology fully comply with mainstream analytical protocol for whole-rock or kerogen analysis and even more, Py-GCMS has a lot of advantages against conventional approach providing us additional valuable information about a sample.

* Excerpted from online journal website (Click the title)

Frontier Labs Products used:

Multi-Shot Pyrolyzer EGA/Py-3030D